GE Infrastructure
Sensing

Test Equipment Depot
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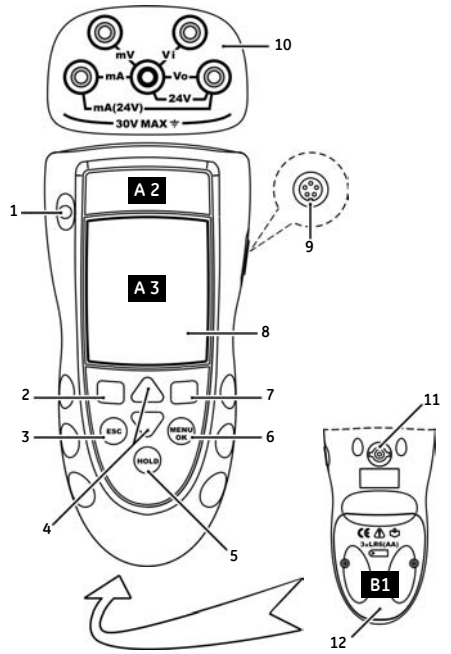
Druck DPI 832

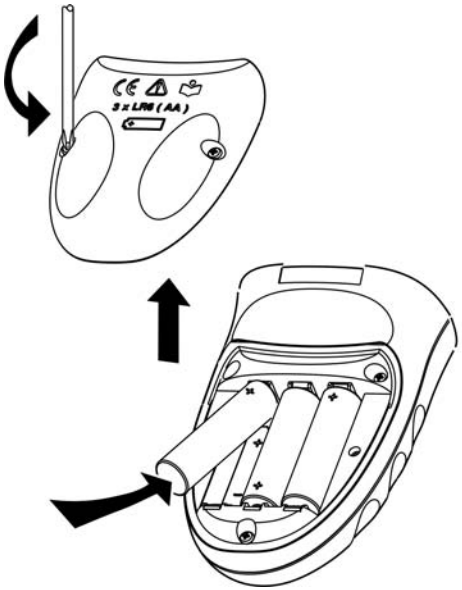
Electrical loop calibrator

User manual - K393

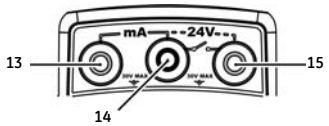
A1


mV
Vi
mA
Vo
24V
mA(24V)
30V MAX
10
A 2
A 3
1
9
8
2
7
3
6
4
5
11
B1
12

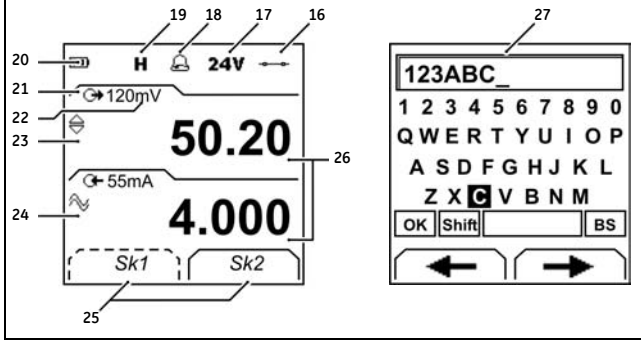
B1


3 x LR6 (AA)

A2


mA
24V
13
15
14

A3


19
18
17
16
20
H
24V
21
120mV
22
23
50.20
26
55mA
24
4.000
Sk1
Sk2
25

27
123ABC_
1 2 3 4 5 6 7 8 9 0
Q W E R T Y U I O P
A S D F G H J K L
Z X C V B N M
OK
Shift
BS

Table of Contents

Introduction **1**

Safety **1**

Safety - Marks and symbols on the instrument 2

To start **2**

To start - Location of items 2

To start - Items on the display 2

To start - Prepare the instrument 2

To start - Power on or off 3

To start - Set up the basic operation 3

To start - Select a task (Measure and/or supply) 3

To start - Set up the settings 4

To start - Edit functions 4

Operation **6**

Operation - Electrical connections 6

Operation - Communications port connections 6

Operation - Measure mV or Volts 6

Operation - Change the output values 6

Operation - Supply mV or Volts 7

Operation - Supply mA 7

Operation - mA measurements 7

Operation - Switch test 8

Operation - UPM Pressure measurements 8

Operation - Error indications 9

Maintenance **9**

Maintenance – Clean the unit 9

Maintenance – Replace the batteries 9

Calibration **9**

Calibration - Before you start 9

Calibration - Procedures (mV or Volts input) 10

Calibration - Procedures (mA input) 10

Calibration - Procedures (mV or Volts output) 11

Calibration - Procedures (mA output) 11

Calibration - Procedures (IDOS UMM) 11

Specification data **12**

Specification - General 12

Specification - Electrical connectors (A1 - Item 10) 12

Specification - Electrical connectors (A2) 12

Customer service ..... **Back cover**

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Introduction

The DPI 832 Electrical Loop Calibrator is part of the Druck DPI 800 series of hand held instruments.

The DPI 800 series uses Intelligent Digital Output Sensor (IDOS) technology to give instant plug and play functionality with a range of Universal Measurement Modules (UMM). Example: the Universal Pressure Module (UPM).

The DPI 832 includes these functions:

Function
* Measure dc mA, mV, Volts
* Supply dc mA, mV, Volts
Step/Ramp functions: Automatic/Manual
Communications port: IDOS or RS232
Language selection
** Measure pressure/Leak test: External IDOS UPM
** Snapshot: Up to 1000 displays with a date/time stamp
HART® resistor
Switch test
Other functions: Hold, Maximum/Minimum/Average, Filter, Tare, Scaled values, Backlight, Alarm

* *Refer to "Specification data".*

** *Optional item*

Safety

Before you use the instrument, make sure that you read and understand all the related data. This includes: all local safety procedures, the instructions for the UMM (if applicable), and this publication.

WARNING

- **It is dangerous to ignore the specified limits for the instrument or to use the instrument when it is not in its normal condition. Use the applicable protection and obey all safety precautions.**
- **Do not use the instrument in locations with explosive gas, vapor or dust. There is a risk of an explosion.**
- **To prevent electrical shocks or damage to the instrument, do not connect more than 30V between the terminals, or between the terminals and the ground (earth).**
- **UPM only. To prevent a dangerous release of pressure, isolate and bleed the system before you disconnect a pressure connection.**

Safety (Continued)

Before you start an operation or procedure in this publication, make sure that you have the necessary skills (if necessary, with qualifications from an approved training establishment). Follow good engineering practice at all times.

Safety - Marks and symbols on the instrument

CE	Complies with European Union directives		Warning - refer to the manual
	Read the manual		Battery
	Earth (Ground)		ON/OFF

To start

To start - Location of items A1 ... A2

Item	Description
1. ❍	On or off button.
2. ▀ ▄	Left-hand soft-key. Selects the function above it on the display (Item 25). Example: Edit
3. **ESC**	Moves back one menu level. Leaves a menu option. Cancels the changes to a value.
4. ▲ ▼	Increases or decreases a value. Highlights a different item.
5. **HOLD**	Holds the data on the display. To continue, press the **HOLD** button again.
6. **MENU OK**	Shows the *Select Task* menu. Selects or accepts an item or value. Selects [✓] or cancels [ ] a selection.
7. ▄ ▀	Right-hand soft-key. Selects the function above it on the display (Item 25). Example: Settings
8.	Display. Refer to A3
9. **SENSOR / PC**	Communications port. Use to connect a Universal Measurement Module (UMM) or a RS232 cable.
10.	Terminals to measure (mV, Volts) or supply (mV, Volts, mA). Refer to "Operation".
11.	Connection point for some of the optional accessories. Refer to the datasheet.
12.	Battery compartment. Refer to B1.
13., 14., 15.	Terminals to measure current, to supply 24V source, and to do switch tests.

To start - Items on the display A3

Item	Description
16.	Task indication for the switch test. = switch closed = switch open UPM only. Task indication for the leak test. *Refer to: Select Task (Table 2/3)*
17. **24V**	The loop power supply is on (mA input only). *Refer to: Select Task (Table 2/3)*
18.	The measured value satisfies one of the alarm conditions. *Refer to: Settings* (Table 4)
19. **H**	The data on the display is on hold. To continue, press the **HOLD** button again.
20.	Shows the battery level: 0 ... 100%.
21.	Identifies the type of data and the measurement range. = Input = Output = IDOS input *Refer to: Select Task (Table 2/3)*
22. ... 24.	The settings applied to the input or output.
22. **mV**	The units or a specified scale (x:y) - (Table 4)
23.	, ... , = Output operation (Table 5)
24.	= Filter = Maximum = Average (Table 4) = Tare = Minimum
25.	A soft-key function. To select an available function, press the soft-key below it. Example: = Move left = Move right
26.	The measured value or values applicable to the task selection.
27.	The *Edit* display to set up text labels (≤ 6 characters): *x:y Scaling* (Table 4). **OK** = Accept the new text label **Shift** = Change the keys: 123ABC or -_+abc = Add a space **BS** = Back space (Delete character)

To start - Prepare the instrument

Before you use the instrument for the first time:

- Make sure that there is no damage to the instrument, and that there are no missing items.
- Remove the plastic film that protects the display. Use the tag (◗) in the top right-hand corner.
- Install the batteries (refer to B1). Then re-attach the cover.

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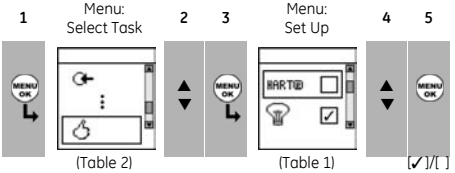
To start - Power on or off

To turn the instrument on or off, press ❍(A1 - item [1]). The instrument does a self test and then shows the applicable data.

When the power is off, the last set of configuration options stays in memory. Refer to "Maintenance".

To start - Set up the basic operation

Use the *Set Up* menu to set up the basic operation of the instrument.



(Table 2) (Table 1) [✓]/[ ]

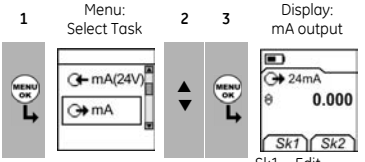
If there is additional data for a menu option, select *Settings* (■ ■) to see the values that are set up. If necessary, adjust the values.

Table 1: Menu options - Set Up

Options (If applicable)	**Description**
HART®	To add a series resistor into the mA circuit. You can then use this instrument together with a HART® communicator to set up and calibrate HART® devices.
	To select and set up the backlight facility + timer. *Additional data: Select Settings* (■ ■)
O/I	To select and set up the power off facility + timer. *Additional data: Select Settings* (■ ■)
	To show the battery level (%).
	To set the display contrast (%). ▲ Increases %, ▼ decreases %
	To set the time + date. The calibration facility uses the date to give service and calibration messages.
	To set the language option.
	To calibrate the instrument. *Additional data: Refer to "Calibration".*
	To select and show the applicable status data. (Software Build, Calibration Due date, Serial Number, IDOS Information).

To start - Select a task (Measure and/or supply)

When the instrument is set up (Table 1), use the *Select Task* menu to select the applicable task.



(Table 2/3)

Sk1 = Edit
Sk2 = Settings

In Table 2/3, IDOS is a Universal Measurement Module (UMM). If you attach a UMM to the communications port (A1 - item [9]), the *Select Task* menu shows the applicable IDOS options.

Table 2: Menu options - Select Task

Options (If applicable)	**Description**
mA or Volts	An input measurement task: mA - Measure mA (±55 mA) Volts - Measure volts (±120mV or ±30V)
mA or Volts	An output task: mA - Supply mA (0 ... 24 mA) Volts - Supply volts (0 ... 120mV or 0 ... 12V)
mA(24V)	Supply mA + the loop power supply is on.
mA(24V)	Measure mA + the loop power supply is on.
	A switch test.
IDOS	UMM only. An IDOS measurement task.
	UPM only. A leak test.
	To set up the way the instrument works. *Additional data: Refer to: Set Up* (Table 1).

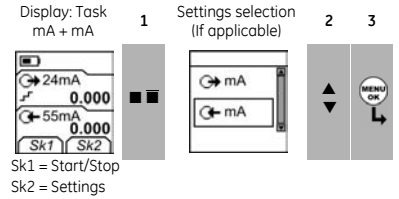
Table 3 shows all the one and two function operations that are available. If you attach a UMM, you can only use the options that include IDOS.

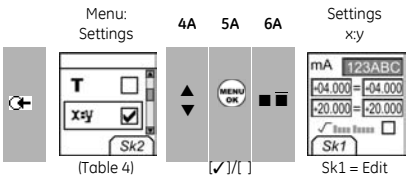
Table 3: Permitted 1 and 2 function operations

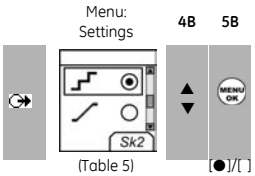
Function		mA	mA(24V)	Volts	Volts	IDOS
		(1)	(1)	(1)	(1)	(1)
mA	(1)	(2)	(2)	×	(2)	(2)
mA(24V)	(1)	(2)	(2)	×	(2)	(2)
	×	(2)	(2)	×	(2)	(2)
	×	×	×	×	×	(2)
IDOS	(1)	(2)	(2)	(2)	(2)	×

To start - Set up the settings

When the task is set up (Table 2/3), use the *Settings* menu to adjust the input and/or output operation.







If there is additional data for a menu option, select *Settings* (■ ■) to see the values that are set up. If necessary, adjust the values. Refer to "Edit functions".

Table 4: (Part of table) Menu options - Settings (Input)

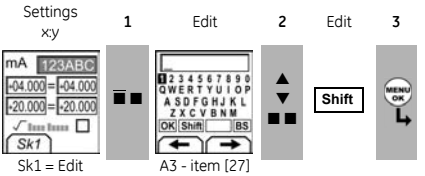
Options (If applicable)	**Description**
... Units	*UPM only = "Pressure Units" if you select an IDOS task (Table 2/3). Select one of the fixed units of measurement (psi, mbar ...).*
▲▼	To include maximum, minimum and average values for the measurement task.
T	To select and set up a tare value for the measurement task (a specified value or the reading on the display). The instrument subtracts a positive tare value, and adds a negative tare value. *Additional data: Select Settings* (■ ■)
x:y	To select and set up a scale of values: One local scale for each measurement task (Maximum: 5). *Additional data (Example 1/2): Select Settings* (■ ■)

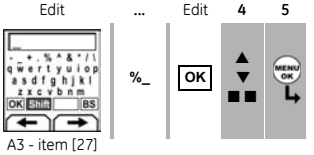
Table 4: (Part of table) Menu options - Settings (Input)

Options (If applicable)	**Description**
	To select and set up the filter values to give a smoother output for the measurement task: Band as a % of full scale (FS). The filter compares each new value with the previous value. If the new value is outside the band, it is not filtered. Low pass filter time constant in seconds. Increase the value to increase damping factor. *Additional data: Select Settings* (■ ■)
	To select and set up the alarm values for the measurement task (maximum and minimum). *Additional data: Select Settings* (■ ■)
0.0	*UPM only.* Gage sensors or sensors with differential operation. A zero correction that makes the instrument read zero at local pressure.
	Leak Test only. To set an applicable period for the leak test (Hours:Minutes:Seconds).

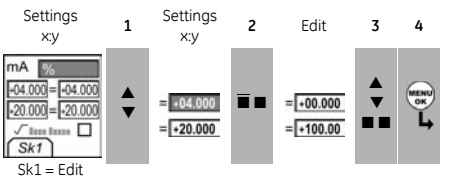
To start - Edit functions

Example 1) Set up a label for *x:y Scaling* = %.





Example 2) Set up values for *x:y Scaling* = 0 to 100%.



✓ = *Flow scaling* (mA, pressure only)

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Table 5: Menu options - Settings (Output)

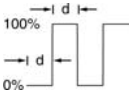
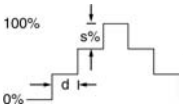
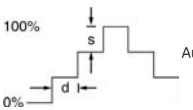
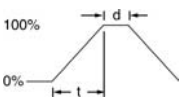
Options	Description
	To select and set up a value for the "Nudge" output. Example: 1.000mA increments. *Additional data: Select Settings* (■ ■)
	To select and set up values for the "Span Check" output. Example output cycle:  This cycle repeats automatically. *Additional data (*Table 6*): Select Settings* (■ ■)
% Step	To select and set up values for the "% Step" output. Example output cycle:  Auto Repeat - Optional *Additional data (*Table 6*): Select Settings* (■ ■)
... Step	To select and set up values for the "Defined Step" output. Example output cycle:  Auto Repeat - Optional *Additional data (*Table 6*): Select Settings* (■ ■)
	To select and set up values for the "Ramp" output. Example output cycle:  Auto Repeat - Optional *Additional data (*Table 6*): Select Settings* (■ ■)

Table 6: Additional data for Settings (Output):

Item	Value
Span Check	
Low (0%)	Set the 0% value.
High (100%)	Set the 100% value.
Dwell (d)	Set the period (Hours:Minutes:Seconds) between each change in value.
% Step	Low (0%), High (100%), Dwell (d): As above.
Step Size (s) ... %	Set the change in value for each step as a percentage of the full-scale range (High - Low).
Defined Step	Low (0%), High (100%), Dwell (d): As above.
Step Size (s)	Set the change in value for each step in mA, mV or Volts.
Ramp	Low (0%), High (100%), Dwell (d): As above.
Travel (t)	Set the period (Hours:Minutes:Seconds) to go from the Low (0%) value to the High (100%) value.
Auto Repeat	If applicable, select this item to repeat a cycle continuously.

Operation

This section gives examples of how to connect and use the instrument. Before you start:

- Read and understand the "Safety" section.
- Do not use a damaged instrument.

Operation - Electrical connections

To prevent instrument errors, make sure that the electrical connections (A1-item [10] and/or A2) are correct.

Operation - Communications port connections

Use the communications port (A1 - item [9]) to attach an IDOS Universal Measurement Module (UMM).

When you attach the cable from a UMM (Figure 6/7), the instrument automatically changes the menus to give you all the applicable options (Table 2/3).

Operation - Measure mV or Volts

To measure mV or Volts:

1. Connect the instrument (Figure 1) and, if necessary, adjust the *Set Up* (Table 1).
2. Select the *Volts* input task from *Select Task* (Table 2/3) and select the necessary range (*mV* or *Volts*).
3. If necessary, adjust the *Settings* (Table 4).

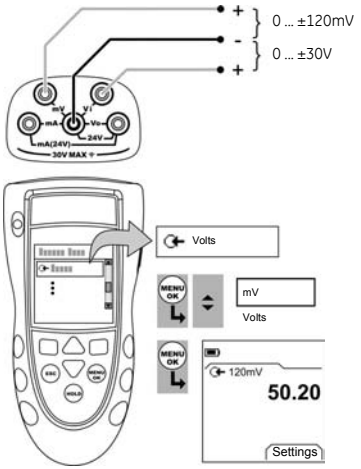


Figure 1: Example configuration - To measure mV or Volts

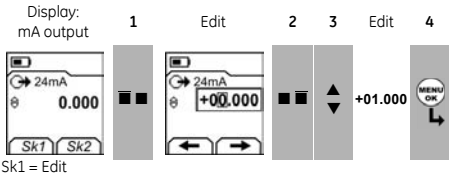
Operation - Change the output values

When the output operation is set up (Table 5), use one of these procedures to change the output values:

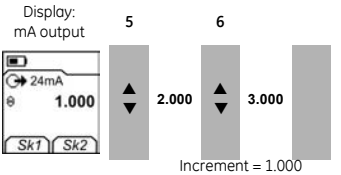
Table 7: Procedures to change the output

Output	Procedure
⇳	Select *Edit* (■ ■) and/or use the ▲ ▼ buttons. See the example below.
100 0	Select *Start/Stop* (■ ■) or use the ▲ ▼ buttons to make the step changes manually.
⟋	Select *Start/Stop* (■ ■).

Example procedure ("Nudge" output):



Sk1 = Edit
Sk2 = Settings



Increment = 1.000
(Table 5)

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Operation - Supply mV or Volts

To supply mV or Volts:

1. Connect the instrument (Figure 2) and, if necessary, adjust the *Set Up* (Table 1).
2. Select the *Volts* output task from *Select Task* (Table 2/3) and select the necessary range (*mV* or *Volts*).
3. If necessary, adjust the *Settings* (Table 5).
4. Supply the output values to the system (Table 7).

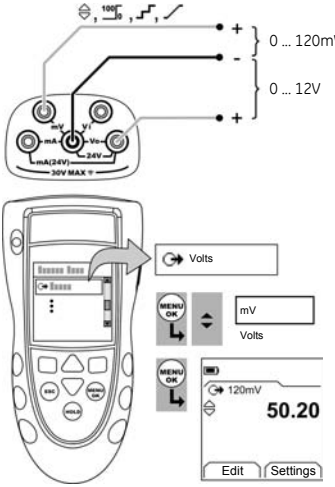
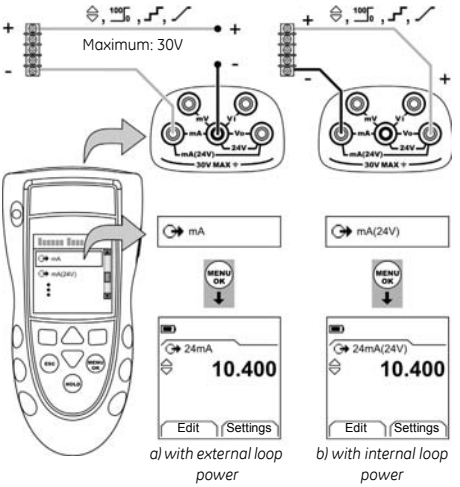


Figure 2: Example configuration - To supply mV or Volts

Operation - Supply mA

To supply a current:

1. Connect the instrument (Figure 3) and, if necessary, adjust the *Set Up* (Table 1).
2. Select the applicable mA output task from *Select Task* (Table 2/3).
3. If necessary, adjust the *Settings* (Table 5).
4. Supply the output values to the system (Table 7)



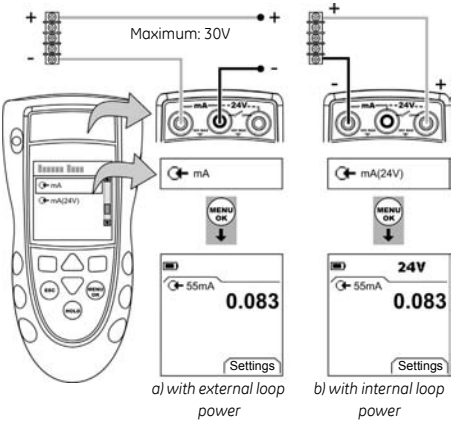
a) with external loop power *b) with internal loop power*

Figure 3: Example configuration - To supply mA

Operation - mA measurements

To measure a current:

1. Connect the instrument (Figure 4) and, if necessary, adjust the *Set Up* (Table 1).
2. Select the applicable mA input task from *Select Task* (Table 2/3) and, if necessary, adjust the *Settings* (Table 4).



a) with external loop power *b) with internal loop power*

Figure 4: Example configuration - mA measurement

Operation - Switch test

To do tests on a switch:

1. Connect the instrument (Figure 5) and, if necessary, adjust the *Set Up* (Table 1).
2. Select the applicable switch test from *Select Task* (Table 2/3) and, if necessary, adjust the *Settings* (Table 5). The display shows the switch condition (open or closed) in the top right-hand corner.
3. Supply the output values to the system (Table 7).

- Example - "Nudge" output.
  a. Use *Edit* (■ ■) to set a value less than the switch value.
  b. Use the ▲ ▼ buttons to change the value in small increments.
- Example - "Ramp" output.
  a. Set "High" and "Low" values that are applicable to the switch value (Table 6). Then, to get an accurate switch value, set a long "Travel" period.
  b. Use *Start/Stop* (■ ■) to start and stop the "Ramp" cycle.

4. If necessary, supply the output values in the opposite direction until the switch changes condition again.

   The display shows the applicable values to open and close the switch.

5. To do the test again, press **ESC** to reset the values.

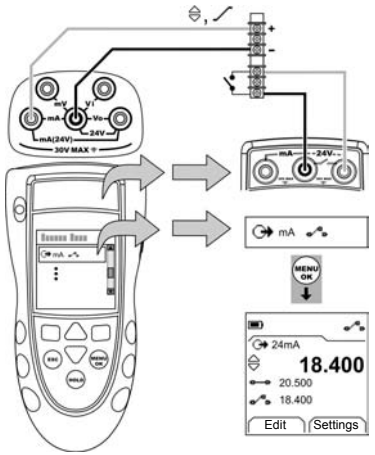
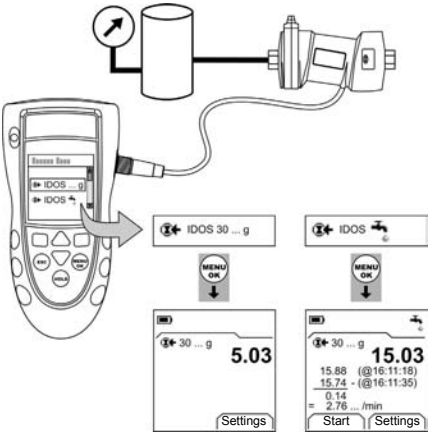


Figure 5: Example configuration - Switch test

Operation - UPM Pressure measurements

Read all the instructions supplied with the UPM and then use the specified procedures to connect it (Figure 6/7).



a) Pressure *b) Leak test*

Figure 6: Example configuration - Pressure measurement with a UPM

When the connections are complete, make the necessary IDOS selections (Table 2/3).

If you re-attach a UPM, the instrument uses the same measurement units that you used before. The instrument keeps a record for the last 10 modules.

UPM - Measure the pressure

To measure the pressure (Figure 6):

1. Select the applicable pressure task from *Select Task* (Table 2/3) and, if necessary, adjust the *Set Up* (Table 1), and the *Settings* (Table 4/5).
2. If necessary, do a zero correction (Table 4).

To measure pressure with another operation (Figure 7), use the same procedure.

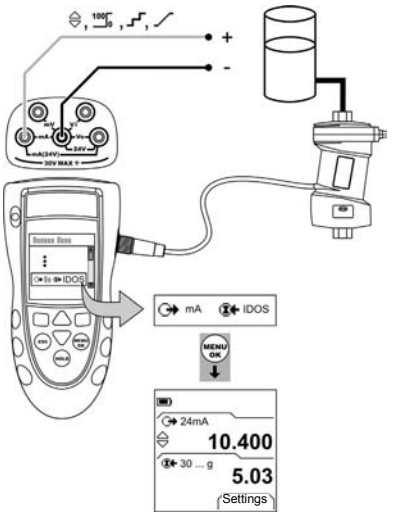


Figure 7: Example configuration - To measure pressure and supply mA

UPM - Leak test

To do a leak test on a pressure system (Figure 6):

1. Select an applicable leak test from *Select Task* (Table 2/3) and, if necessary, adjust the *Set Up* (Table 1), and the *Settings* (Table 4).
2. Set the period for the leak test (Table 4).
3. If necessary, do a zero correction (Table 4).
4. To start the leak test, select Start (■ ■). When the test is finished, the instrument calculates the leak rate in the applicable units/minute.

Operation - Error indications

If the display shows <<<< or >>>> :

- Make sure that the range is correct.
- Make sure that all the related equipment and connections are serviceable.

Maintenance

This section gives procedures to maintain the unit in a good condition. Return the instrument to the supplier for all repairs.

Maintenance – Clean the unit

Clean the case with a moist, lint-free cloth and a weak detergent. Do not use solvents or abrasive materials.

Maintenance – Replace the batteries **B1**

To replace the batteries, refer to B1. Then re-attach the cover.

Make sure that the time and date are correct. The calibration facility uses the date to give service and calibration messages.

All the other configuration options stay in memory.

Calibration

Note: GE can provide a calibration service that is traceable to international standards.

We recommend that you return the instrument to the manufacturer or an approved service agent for calibration.

If you use an alternative calibration facility, make sure that it uses these standards.

Calibration - Before you start

To do an accurate calibration, you must have:

- the calibration equipment specified in Table 8.
- a stable temperature environment: 70 ± 2°F (21 ± 1°C)

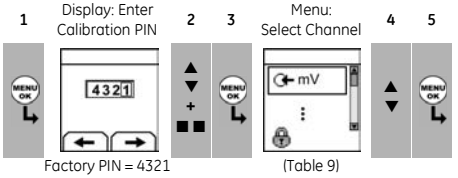
Table 8: Calibration equipment

Function	Calibration equipment
mV/Volts	mV/Volts calibrator. Accuracy: Refer to Table 10/11, and Table 13/14.
Pressure	UPM only. Refer to the user manual for the IDOS UPM.
mA	mA calibrator. Accuracy: Refer to Table 12 and Table 15.

Before you start the calibration, make sure that the time and date on the instrument are correct (Table 1).

Selection sequence:

➤ *Select Task* (Table 2) ➤ *Set Up* (Table 1) ➤ *Calibration* ➤.



Factory PIN = 4321 (Table 9)

Table 9: Calibration options

Options	Description
...	To calibrate the specified input: mV, Volts, mA
...	To calibrate the specified output: mA, mV, Volts
IDOS ...	UMM only. To calibrate the specified IDOS UMM. Refer to the user manual for the IDOS UMM.
	Calibration Due: To set the date of the next calibration for the instrument. After the specified calibration date, there is a warning message. There is a selection box to stop the warning.
	To change the calibration PIN (Personal Identification Number).

When you select a channel, the display shows the applicable instructions to complete the calibration.

When the calibration is complete, select *Calibration Due* and set the new calibration date for the instrument.

Calibration - Procedures (mV or Volts input)

1. Connect the instrument to the calibration equipment (Figure 1).
2. Let the equipment get to a stable temperature (minimum: 5 minutes since the last power on).
3. Use the calibration menu (Table 9) to do a three-point calibration (-FS, Zero and +FS). The display shows the applicable instructions to complete the calibration.
4. To make sure that the calibration is correct, select the applicable *Volts* input task and range (Table 2).
5. Then apply the input values that are applicable to the calibration:

- mV: -120, -60, -30, 0 (short circuit)
  Then mV: 0, 30, 60, 120

OR

- Volts (V): -30, -15, -5, 0 (short circuit)
  Then volts (V): 0, 5, 15, 30

6. Make sure that the error is in the specified limits (Table 10 or Table 11).

Table 10: mV input error limits

Applied mV	Calibrator error (mV)	Permitted DPI 832 error (mV)
±120	0.0013	0.03
±60	0.0008	0.02
±30	0.0006	0.02
0 (Short circuit)	-	0.01

Table 11: Volts (V) input error limits

Applied V	Calibrator error (V)	Permitted DPI 832 error (V)
±30	0.00058	0.004
±15	0.00011	0.002
±5	0.00006	0.001
0 (Short circuit)	-	0.001

Calibration - Procedures (mA input)

1. Connect the instrument to the calibration equipment (Figure 4).
2. Let the equipment get to a stable temperature (minimum: 5 minutes since the last power on).
3. Use the calibration menu (Table 9) to do a three-point calibration (-FS, Zero and +FS). The display shows the applicable instructions to complete the calibration.
4. To make sure that the calibration is correct, select the applicable mA input task (Table 2) and apply these values:

- mA: -55, -40, -24, -18, -12, -6, 0 (short circuit)
  Then mA: 0, 6, 12, 18, 24, 40, 55.

5. Make sure that the error is in the specified limits (Table 12).

Table 12: mA input error limits

Applied mA	Calibrator error (mA)	Permitted DPI 832 error (mA)
±55	0.0022	0.005
±40	0.0018	0.004
±24	0.0014	0.003
±18	0.0004	0.003
±12	0.0003	0.002
±6	0.0002	0.002
0 (Short circuit)	-	0.001

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Calibration - Procedures (mV or Volts output)

1. Connect the instrument to the calibration equipment (Figure 2).
2. Let the equipment get to a stable temperature (minimum: 5 minutes since the last power on).
3. Use the calibration menu (Table 9) to do a two-point calibration (Zero and +FS). The display shows the applicable instructions to complete the calibration.
4. To make sure that the calibration is correct, select the applicable *Volts* output task and range (Table 2).
5. Then set the output values that are applicable to the calibration:

- mV: 0 (short circuit), 30, 60, 90, 120

OR

- Volts (V): 0 (short circuit), 3, 6, 9, 12

6. Make sure that the error is in the specified limits (Table 13 or Table 14).

Table 13: mV output error limits

Output mV	**Calibrator error (mV)**	**Permitted DPI 832 error (mV)**
0 (Short circuit)	-	0.01
30	0.000425	0.02
60	0.0008	0.03
90	0.001175	0.03
120	0.00098	0.04

Table 14: Volts (V) output error limits

Output V	**Calibrator error (V)**	**Permitted DPI 832 error (V)**
0 (Short circuit)	-	0.001
3	0.0000175	0.002
6	0.00003	0.002
9	0.00005	0.002
12	0.000134	0.002

Calibration - Procedures (mA output)

1. Connect the instrument to the calibration equipment (Figure 3).
2. Let the equipment get to a stable temperature (minimum: 5 minutes since the last power on).
3. Use the calibration menu (Table 9) to do a two-point calibration (Zero and +FS). The display shows the applicable instructions to complete the calibration.
4. To make sure that the calibration is correct, select the applicable mA output task (Table 2) and set these output values:

- mA: 0 (short circuit), 4, 12, 20, 24

5. Make sure that the error is in the specified limits (Table 15).

Table 15: mA output error limits

Output mA	**Calibrator error (mA)**	**Permitted DPI 832 error (mA)**
0 (Short circuit)	-	0.001
4	0.00029	0.001
12	0.0014	0.001
20	0.00185	0.002
24	0.0023	0.002

Calibration - Procedures (IDOS UMM)

Refer to the user manual for the IDOS UMM.

When the calibration is complete, the instrument automatically sets a new calibration date in the UMM.

Specification data

All accuracy statements are for one year.

Specification - General

Languages	English [Default]
Operating temperature	14 ... 122°F (-10 ... 50°C)
Storage temperature	-4 ... 158°F (-20 ... 70°C)
Humidity	0 to 90% without condensation (Def Stan 66-31, 8.6 cat III)
Shock/Vibration	BS EN 61010:2001; Def Stan 66-31, 8.4 cat III

EMC	BS EN 61326-1:1998 + A2:2001
Safety	Electrical - BS EN 61010:2001; CE Marked
Size (L: W: H)	7.1 x 3.3 x 2.0 in (180 x 85 x 50 mm)
Weight	14 oz (400 g)
Power supply	3 x AA alkaline batteries
Duration (Measure)	mV, Volts: ≈ 60 hours mA: ≈ 25 hours
Duration (Supply)	mV, Volts: ≈ 50 hours mA: ≈ 11 hours (24 V Source at 12 mA)

Specification - Electrical connectors (A1 - Item 10)

Range (Measure):	0 to ±120 mV 0 to ±30 V
Accuracy: Measure mV	0.02% of reading + 2 counts
Accuracy: Measure V	0.03% of reading + 2 counts
Range (Supply):	0 to 120 mV 0 to 24 mA 0 to 12 V
Accuracy (Supply): mA, mV, V	0.02% of reading + 2 counts
Temperature coefficient (Measure or supply) 14 ... 50°F, 86 ... 122°F (-10 ... 10°C, 30 ... 50°C)	 0.0017% FS / °F (0.003% FS / °C)
Connectors (A1 - Item 10)	Five 0.16 in (4 mm) sockets

Specification - Electrical connectors (A2)

Range (Measure)	0 to ±55 mA
Accuracy	0.02% of reading + 3 counts
Temperature coefficient 14 ... 50°F, 86 ... 122°F (-10 ... 10°C, 30 ... 50°C)	 0.0011% FS / °F (0.002% FS / °C)
Switch detection	Open and closed. 2 mA current.
Loop power output	24 V ± 10%
HART® resistor	250 Ω (menu selection)
Connectors (A2)	Three 0.16 in (4 mm) sockets

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